

# **SPAWAR** FACT SHEET



## **Navy Communications Satellite Programs**

Office of Congressional and Public Affairs  
Space & Naval Warfare Systems Command  
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## **Mobile User Objective System (MUOS)**

### **MILITARY UHF TODAY**

The Navy's Ultra High Frequency (UHF) Follow-On (UFO) constellation provides narrowband tactical satellite communications to the DoD warfighter. The UFO constellation, when complete, will consist of eight satellites plus an on-orbit spare. Each satellite contains 38 UHF (also known as "narrowband") communication channels plus one additional channel for Fleet Broadcast. The newer satellites also have extremely high frequency (EHF) and Global Broadcast Service (GBS) payloads. The UHF spectrum offers some distinct advantages, such as being able to penetrate heavy weather, foliage, and concrete reinforced buildings. UFO satellites are the mainstay UHF communications for the mobile warfighter, and operate in the general range of 290-320 MHz uplink, and 240-270 MHz downlink. These frequencies are well suited for low-cost, low power, portable radios that reliably operate in severe environments and offer assured access and netted communication.

The UFO constellation, initially launched in 1993, will begin to reach the end of its design life early in the next century. The Navy has developed a narrowband acquisition strategy that consists of three components designed to maintain UHF availability at an acceptable level:

1. procure an additional UFO satellite with launch date in the year 2003,
2. off-load requirements to emerging commercial systems as a means of reducing the dependence on current military systems, and
3. develop the Mobile User Objective System (MUOS), the next generation narrowband system.

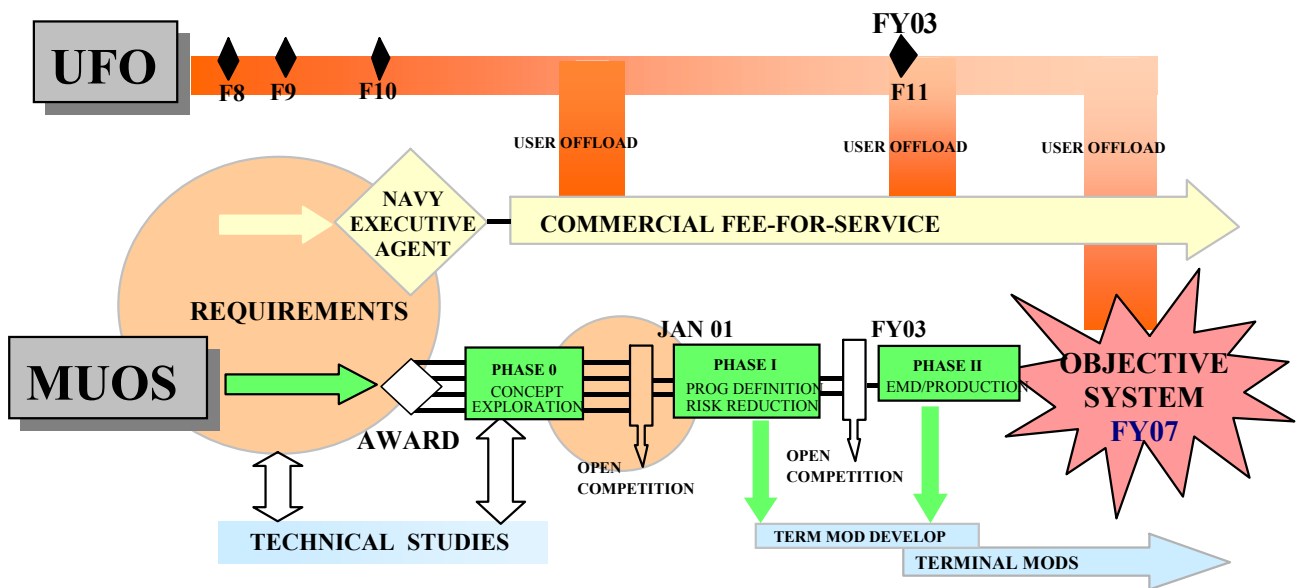
### **UHF TERMINALS**

UFO, and the older Fleet Satellite (FLTSAT), are the primary providers of military UHF SATCOM. They are supplemented by Intelligence Satellite (INTELSAT) and International Maritime Satellite (INMARSAT) L-band services, which provide commercial services for military communications at sea. The demand for UHF communications has led to the proliferation of UHF terminals onboard practically every type of military platform: aircraft, submarines, warships, tanks, and trucks. It is estimated that there are more than over 7,500 terminals in use today, with a significant increase in fielded terminals expected in the next few years. This substantial investment in ground equipment is an important consideration for follow-on systems such as MUOS.

### **MUOS ACQUISITION**

As the next-generation narrowband satellite constellation, MUOS will initially supplement, and ultimately replace, the UFO constellation. MUOS requirements are derived from the MILSATCOM Mission Needs Statement, the Advanced MILSATCOM Capstone Requirements Document, and the MUOS Operational Requirements Document (ORD). The principal objectives of MUOS are to provide warfighters with assured access to communications, netted and point-to-point communications, worldwide (including polar) coverage, joint interoperability, and communications on the move. The MUOS, which will be a system comprised of spacecraft, spacecraft control elements, and network control elements, is envisioned as part of a larger "system of systems," known notionally as the Advanced Narrowband Concept, or ANC. As an overarching communications architecture, the ANC will consist of MUOS, combined with other narrowband

communication elements such as ground terminals, gateways/teleports, and commercial services, providing robust tactical communications to the warfighter. As the lead service for UHF MILSATCOM, the Navy has been charged with the acquisition responsibility for MUOS. The MUOS acquisition will begin with a Concept Exploration (CE) phase, consisting of a series of relatively short-term contract efforts intended to identify alternative solutions to MUOS performance requirements. The focus of these efforts will be to define and evaluate the feasibility of alternative concepts (for the ANC and for the MUOS sub-elements) and to provide a basis for assessing the relative merits (i.e. advantages and disadvantages, degree of risk) of these concepts. System requirements for the CE effort will be provided to industry contractors in the form of draft versions of the MUOS ORD and MUOS Performance Specification (MPS). These documents will define high-level system requirements and the Navy will encourage contractors to be flexible and innovative in developing their ANC and MUOS concepts. Based on the results of the CE phase, the Navy may update the MUOS ORD and MPS to reflect favored aspects of industry concepts.



Following the CE phase, the Navy plans to move into the Program Definition and Risk Reduction (PDRR) acquisition phase. In this phase, one or more contracts will be awarded to industry aimed at reducing high-risk elements associated with MUOS. Part of the PDRR effort will also be focused on Cost as an Independent Variable (CAIV) assessments. CAIV assessments will be aimed at determining whether or not reductions in system requirements can yield desired levels of system life cycle cost avoidance. At the conclusion of the PDRR phase, the Navy expects to have a well-defined, low-risk MUOS concept in hand. The final phase of the MUOS acquisition will consist of a combined Engineering and Manufacturing Development/Production effort, resulting in initial operational capability in 2007. Drawing on the success of the UFO program, this contract may require on-orbit delivery and checkout of MUOS satellites prior to Government acceptance. The Government may also require that potential contractors offer an extended warranty for MUOS as part of the production and delivery of the system.

## CONCLUSION

Building on the foundation of the existing UHF communication system, the Navy is embarking on an important program to provide warfighters with a next-generation narrowband MILSTACOM system that meets modern tactical communication requirements. The MUOS acquisition program will extend from Concept Exploration to Production and Delivery, and is designed to foster technical innovation while adhering to the key objectives of reducing overall cost and risk to the Navy and U.S. taxpayers. MUOS will equip U.S. and Allied forces with state-of-the-art tactical communications for the new millennium.

### For Further Information, Please Contact

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